Fact Sheet

Aquifer Protection Permit #P-105780
Place ID 114405, LTF 40681
Special Planning Area #3 Water Reclamation Facility

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to A.A.C. R18-9-A213. This document gives pertinent information concerning the issuance of the permit. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards at the Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). The purpose of BADCT is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., local subsurface geology) to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer, or to keep pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

Name of Permittee:	The City of Surprise
Mailing Address:	12425 W Bell Rd Surprise, Arizona 85374
Facility Name and Location:	Special Planning Area #3 Water Reclamation Facility 20458 N 183rd Ave Surprise, Arizona 85374 Maricopa County

Regulatory Status

An application for an APP was received by ADEQ on June 14, 2006.

Facility Description

The City of Surprise Special Planning Area (SPA) #3 Water Reclamation Facility (WRF) has the capacity to collect and treat a maximum average monthly flow of 1.8 million gallons per day (mgd), upon completion of Phase I construction. Under subsequent permit amendments, the WRF is planned to reach a flow rate of 30 mgd at final build-out.

The Phase I treatment process consists of a screening & grit removal unit, an anoxic reactor, a sequential batch reactor (SBR), disc filters, ultraviolet (UV) disinfection, an aerobic digester, a centrifuge and an effluent pump station. The effluent will be recharged through onsite recharge basins located to the north of the WRF. In later phases, the facility will also reuse the effluent as process water and in construction applications. The WRF will produce reclaimed water meeting Class A+ Reclaimed Water Standards (A.A.C. R18-11, Article 3) that may be delivered for beneficial use under a valid reclaimed water permit as per A.A.C. R18-9, Article 7. All the sludge, including screenings, grit, and scum, will be hauled off-site for disposal in accordance with State and Federal regulations.

For initial flows up to 18,000 gallons per day (gpd), influent will be vaulted and hauled from an off site lift station to a nearby sewage treatment facility. For flows from 18,000 gpd to 180,000 gpd, the WRF will operate using the aerobic digesters as low-flow SBRs. Flows above 180,000 gpd will be treated as described above.

In addition to the APP conditions pertaining to treatment and disposal of sewage sludge, the permittee must also comply with the requirements for sewage sludge disposal in 40 Code of Federal Regulations (CFR) Part 503, 40 CFR 258: for biosolids disposed in municipal solid waste landfills, 40 CFR 257: for all biosolids use and disposal practices not covered under 40 CFR 258 or 503, and 18 A.A.C. Ch. 9, Art. 10.

Depth to groundwater at the WRF site is approximately 350 feet below ground surface, and the direction of groundwater flow is to the southeast.

The WRF was designed and shall be constructed according to plans approved by APP and Reuse Unit I of ADEQ.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The WRP is designed to meet the treatment performance criteria for new facilities as specified in R18-9-B204.

III. HYDROGEOLOGIC SETTING

The City of Surprise SPA #3 WRF is located within the Basin and Range physiographic province of Arizona, which is characterized by northwest trending mountain ranges separated by gently sloping alluvial valleys. The mountain ranges are generally composed of crystalline and/or lithified basement rocks, whereas the alluvial valleys are composed of unconsolidated to well cemented sedimentary deposits.

The facility is located over groundwater within the West Salt River Valley Sub-basin of the Phoenix Active Management Area within the Middle Gila Watershed. The basin-fill sediments within the West Salt River Valley are divided into three geological units called the Upper Alluvial Unit (UAU), the Middle Alluvial Unit (MAU), and the Lower Alluvial Unit (LAU). The UAU consists of sand, gravel, cobbles, and boulders with thin interbeds of silt and clay. The UAU extends from the surface to approximately 300 feet below land surface and the base of the MAU is at 1,170 feet bgs. The base of the LAU is at approximately 1,800 feet bgs.

The primary water-bearing unit beneath the SPA #3 WRF site is the MAU. Groundwater occurs near the top of the MAU at approximately 350 feet bgs. Groundwater flow is to the southeast with a hydraulic gradient of 0.017 feet/foot.

An industrial well located one-half mile to the north of the site was sampled as part of the application. No AWQS were exceeded for arsenic, chromium, fluoride or nitrate. A pilot well was drilled for the proposed development approximately 2.5 miles north of the WRF.

Groundwater samples were collected at depth specific intervals starting at the water table to approximately 1,500 feet bgs. No AWQS standards were exceeded, except arsenic at 10 depth specific sampling locations.

The nearest down gradient well is the Arizona American Water Company Well (#55-590166), approximately 1.5 miles southeast of the facility.

The Discharge Impact Area (DIA) for the site was modeled over a 20 years period and created a groundwater mound of 74 feet in height. The DIA extends approximately 3,450 feet downgradient. There are no registered wells within the estimated DIA. The model assumed all effluent recharged to the groundwater.

IV. STORM WATER/SURFACE WATER CONSIDERATIONS

The facility is located within the Middle Gila River surface water basin. There are no perennial surface water bodies in the vicinity of the subject site. There are six unnamed ephemeral washes within one mile of the site. Two unnamed tributaries bisect the WRF site. The facility is less than one-half (½) mile from Trilby Wash Basin and one (1) mile northwest of the Beardsley Canal.

The subject site is located in Zone A of the 100 year floodplain of the two unnamed tributaries. The applicant has elevated the site under a Floodplain Use Permit approved by the Maricopa County Flood Control District. An application for a Letter of Map Revision (LOMAR) has been prepared and submitted to the Federal Emergency Management Agency (FEMA) for review. Upon FEMA approval of the LOMAR, the WRF site will be removed from the 100 year floodplain. The facility shall not operate the WRF or infiltration basins prior to approval of the LOMAR.

V. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

SPA #3 WRF effluent is expected to meet Aquifer Water Quality Standards (AWQS) at the point of compliance (POC). The effluent will be recharged through onsite recharge basins located on the north side of the WRF site, or delivered for beneficial reuse under a valid reclaimed water permit.

Monitoring and Reporting Requirements

Representative samples of the effluent shall be collected from the clear well. The permittee shall monitor the effluent daily for flow rate and fecal coliform, monthly for total nitrogen, quarterly for metals, and annually for volatile organic compounds (see Section 4.2, Table IA in the permit).

To ensure that site operations do not violate Reclaimed Water Quality Standards for the beneficial use of Class A+ reclaimed water, the permittee shall monitor the reclaimed water at the clear well, beginning within 30 days after signature of a reclaimed water permit. The permittee shall monitor the reclaimed water daily for total nitrogen, fecal coliform and turbidity, and monthly for enteric virus (see Section 4.2, Table IB in the permit).

To ensure that site operations do not violate AWQS at the POC, the permittee shall monitor the groundwater at the POC monthly for depth to groundwater, total nitrogen, nitrate-nitrite as N,

Total Kjeldahl Nitrogen (TKN) and total coliform, quarterly for metals and common cations and anions, and semi-annually for volatile organic compounds (see Section 4.2, Table II in the permit).

Facility inspection and operational monitoring shall be performed on a routine basis (see Section 4.2, Table III in the permit).

Point of Compliance (POC)

The hazardous/non-hazardous POC is located as follows:

POC #	Descriptive Location	Latitude	Longitude
1	Southeast of the recharge basins	33° 40' 12" N	112° 27' 10" W

Groundwater monitoring shall be conducted at the POC as per Section 3.0, Compliance Schedule.

The Director may amend this permit to designate additional points of compliance if information on groundwater gradients or groundwater usage indicates the need.

VI. COMPLIANCE SCHEDULE

Description	Due by:
Construction and Start-Up	
The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department that confirms that the facility is constructed according to the Department-approved design report or plans and specifications, as applicable.	Prior to discharging under this permit and within 90 days after completion of construction.
The permittee shall submit a copy of a Letter of Map Revision (LOMAR) issued by the Federal Emergency Management Agency (FEMA), demonstrating that SPA #3 WRF has been removed from Zone A of the Flood Insurance Rate Map (FIRM).	Prior to discharging under this permit.
POC Well and Ambient Groundwater Monitoring	
The permittee shall install a groundwater monitor well at POC #1.	Within 60 days after the date of permit signature.
The permittee shall submit a monitor well installation report, including a driller's log and a driller's completion report, for the monitor well at POC #1.	Within 30 days after the completion of well installation.
The permittee shall begin eight (8) quarterly rounds of ambient groundwater quality monitoring for the parameters listed in Section 4.2, Table II.	The first sample shall be collected within 45 days after the completion of well installation.
The permittee shall submit an ambient groundwater quality report, summarizing the results of all four (4) rounds of ambient groundwater monitoring, and an application for an APP amendment to set ALs and AQLs for the well at POC #1.	Within 90 days after collection of the final ambient groundwater sample.
The permittee shall begin routine groundwater monitoring under Section 4.2, Table II.	Within 30 days after collection of the final ambient groundwater sample.
The permittee shall submit a report evaluating whether the screened interval in the POC well remains appropriate, given that a groundwater mound may occur due to the action of the infiltration basins.	Annually, with the first report due within 15 months after the beginning of discharge under this permit.
Reclaimed Water Monitoring	
The permittee shall begin monitoring under Section 4.2, Table IB – Reclaimed Water Monitoring.	Within 30 days after signature of a reclaimed water permit.

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VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

The City of Surprise has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B). The WRF was designed as per the design report prepared and signed (sealed) by Michael D. Olivier, P.E., of PACE, Inc., dated June 5, 2006, and subsequent sealed submittals that served as additions to the design report. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

The City of Surprise has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The estimated dollar amount demonstrated for financial capability is $681,240. The financial capability was demonstrated through R18-9-A203(B)(1)and(2). The permittee shall maintain financial capability throughout the life of the facility.

Zoning Requirements

SPA #3 WRF has been properly zoned for the permitted use and the permittee has complied with all zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(A)(2)(c).

VIII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit.

The public notice for this permit was published in the (enter name of publication) on (enter date) under Public Notice No. (enter public notice number).

Public Comment Period (A.A.C. R18-9-109(A))

The Department shall accept written comments from the public before a significant permit amendment is made. The written public comment period begins on the publication date of the public notice and extends for 30 calendar days. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-109(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

IX. ADDITIONAL INFORMATION

Additional information relating to this permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division - Groundwater Section - APP and Reuse Unit
Attn: Bob Manley
1110 West Washington Street, Mail Code 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771-4498